## **Listing of Claims**

Claim 1 (Currently Amended): A method of processing a packet in a gateway device connected to a plurality of communication paths providing connection with corresponding networks, said method comprising:

providing a search utility in said gateway, said search utility enabling the retrieval of both a forwarding information and a network address translation (NAT) information necessary for processing said packet in a single search operation, wherein said NAT information specifies a new address for an original address in said packet, said forwarding information specifying one of said plurality of communication paths to forward said packet, each of said plurality of communication paths being identified by a corresponding physical port;

receiving said packet containing said original address;

determining said forwarding information and said NAT information for said packet in a single search operation by using said search utility;

substituting said new address for said original address in said packet; and

forwarding said packet with said new address on the specified one of said plurality of communication paths in said forwarding information.

Claim 2 (Previously Presented): The method of claim 1, wherein said providing comprises maintaining a single table for both said forwarding information and said NAT information.

Claim 3 (Previously Presented): The method of claim 2, wherein said maintaining comprises storing said single table in a content addressable memory (CAM) indexed by a source address and a destination address, wherein said determining comprises providing the

source address and destination address in said packet as a key to said CAM to retrieve said

forwarding information and said NAT information.

Claim 4 (Original): The method of claim 3, wherein said CAM comprises a multi-way

CAM.

Claim 5 (Previously Presented): The method of claim 2, wherein said gateway device

comprises a service selection gateway (SSG) connecting a plurality of remote systems to a

plurality of service domains, wherein one of said original address and said new address

comprises a local address of a remote system and the other address comprises an external

address in a service domain for said remote system, said maintaining further comprises:

storing NAT information and forwarding information in a plurality of tables

partitioned according to service domains such that forwarding information and NAT

information related to the same service domain is stored in the same one of said plurality of

tables.

Claim 6 (Previously Presented): The method of claim 5, wherein at least one of said

plurality of tables stores NAT information and forwarding information related to at least a

first service domain and a second service domain contained in said plurality of service

domains, said first service domain and said second service domain respectively containing

a first set of addresses and a second set of addresses accessible from said gateway device,

wherein said first set of addresses and said second set of addresses do not overlap.

Claim 7 (Original): The method of claim 1, wherein said forwarding information comprises an interface on said gateway device, wherein said forwarding comprises sending said packet on said interface, wherein said packet is received in the form of an Internet Protocol (IP) packet.

Claim 8 (Previously Presented): A gateway device for processing a packet, said gateway device comprising:

interface means coupled to a plurality of communication paths, wherein each communication path provides connection with a corresponding network;

means for searching enabling the retrieval of both a forwarding information and a network address translation (NAT) information necessary for processing said packet in a single search operation, wherein said NAT information specifies a new address for an original address in said packet, and said forwarding information specifying one of said plurality of communication paths to forward said packet;

means for receiving said packet containing said original address;

means for determining said forwarding information and said NAT information for said packet by using said single search;

means for substituting said new address for said original address in said packet; and means for forwarding said packet with said new address on the communication path specified in said forwarding information.

Claim 9 (Previously Presented): The gateway device of claim 8, wherein said means for searching maintains a single table for both said forwarding information and said NAT information

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Claim 10 (Previously Presented): The gateway device of claim 9, wherein a memory

means stores said single table in a content addressable memory (CAM) indexed by a source

address and a destination address, wherein said means for determining comprises means for

providing the source address and destination address in said packet as a key to said CAM to

retrieve said forwarding information and said NAT information.

Claim 11 (Original): The gateway device of claim 10, wherein said CAM comprises

a multi-way CAM, said packet comprises an IP packet, and said forwarding information

comprises an interface on said gateway device, wherein said means for forwarding sends said

packet on said interface.

Claim 12 (Previously Presented): The gateway device of claim 10, wherein said

gateway device comprises a service selection gateway (SSG) connecting a plurality of remote

systems to a plurality of service domains, wherein one of said original address and said new

address comprises a local address of a remote system and the other address comprises an

external address in a service domain for said remote system, said memory means stores NAT

information and forwarding information in a plurality of tables partitioned according to

service domains such that forwarding information and NAT information related to the same

service domain is stored in the same one of said plurality of tables.

Claim 13 (Previously Presented): The gateway device of claim 12, wherein at least

one of said plurality of tables stores NAT information and forwarding information related to

at least a first service domain and a second service domain contained in said plurality of

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service domains, said first service domain and said second service domain respectively

containing a first set of addresses and a second set of addresses accessible from said gateway

device, wherein said first set of addresses and said second set of addresses do not overlap.

Claim 14 (Previously Presented): A computer readable medium storing one or more

sequences of instructions for causing a gateway device to process a packet, said gateway

device connected to a plurality of communication paths providing connection with

corresponding networks, wherein execution of said one or more sequences of instructions by

one or more processors contained in said gateway device causes said gateway device to

perform the actions of:

providing a search utility in said gateway, said search utility enabling the retrieval of

both a forwarding information and a network address translation (NAT) information

necessary for processing said packet in a single search operation, wherein said NAT

information specifies a new address for an original address in said packet and said forwarding

information specifies one of said plurality of communication paths to forward said packet;

receiving said packet containing said original address;

determining said forwarding information and said NAT information for said packet

in a single search operation by using said search utility;

substituting said new address for said original address in said packet; and

forwarding said packet with said new address on the communication path specified

in said forwarding information.

Claim 15 (Previously Presented): The computer readable medium of claim 14,

wherein said providing comprises maintaining a single table for both said forwarding

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information and said NAT information.

Claim 16 (Previously Presented): The computer readable medium of claim 15,

wherein said maintaining comprises storing said single table in a content addressable memory

(CAM) indexed by a source address and a destination address, wherein said determining

comprises providing the source address and destination address in said packet as a key to said

CAM to retrieve said forwarding information and said NAT information.

Claim 17 (Original): The computer readable medium of claim 16, wherein said CAM

comprises a multi-way CAM and said packet is received in the form of an IP packet.

Claim 18 (Previously Presented): The computer readable medium of claim 15,

wherein said gateway device comprises a service selection gateway (SSG) connecting a

plurality of remote systems to a plurality of service domains, wherein one of said original

address and said new address comprises a local address of a remote system and the other

address comprises an external address in a service domain for said remote system, said

maintaining further comprises:

storing NAT information and forwarding information in a plurality of tables

partitioned according to service domains such that forwarding information and NAT

information related to the same service domain is stored in the same one of said plurality of

tables.

Claim 19 (Previously Presented): The computer readable medium of claim 18,

wherein at least one of said plurality of tables stores NAT information and forwarding

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information related to at least a first service domain and a second service domain contained

in said plurality of service domains, said first service domain and said second service domain

respectively containing a first set of addresses and a second set of addresses accessible from

said gateway device, wherein said first set of addresses and said second set of addresses do

not overlap.

Claim 20 (Previously Presented): A gateway device for processing a packet, said

gateway device comprising:

a plurality of ports, each of said plurality of ports being coupled to a corresponding

one of a plurality of communication paths providing connection with a corresponding

network:

a memory unit storing a forwarding information and a network address translation

(NAT) information necessary for processing said packet, wherein said NAT information

specifies a new address for an original address in said packet, and said forwarding

information specifying one of said plurality of communication paths to forward said packet;

an inbound interface receiving said packet containing said original address;

a forwarding and NAT block determining said forwarding information and said NAT

information for said packet using a single search, said forwarding and NAT block substituting

said new address for said original address in said packet; and

an outbound interface forwarding said packet with said new address on the

communication path specified in said forwarding information.

Claim 21 (Previously Presented): The gateway device of claim 20, wherein said

memory unit stores said forwarding information and said NAT information in a single table.

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Claim 22 (Previously Presented): The gateway device of claim 21, wherein said

memory unit comprises a content addressable memory (CAM) indexed by a source address

and a destination address, wherein said forwarding and NAT block sends the source address

and destination address in said packet as a key to said CAM to retrieve said forwarding

information and said NAT information.

Claim 23 (Original): The gateway device of claim 22, wherein said CAM comprises

a multi-way CAM and said packet comprises an IP packet.

Claim 24 (Previously Presented): The gateway device of claim 21, wherein said

gateway device comprises a service selection gateway (SSG) connecting a plurality of remote

systems to a plurality of service domains, wherein one of said original address and said new

address comprises a local address of a remote system and the other address comprises an

external address in a service domain for said remote system, wherein said memory unit stores

NAT information and forwarding information in a plurality of tables partitioned according

to service domains such that forwarding information and NAT information related to the

same service domain is stored in the same one of said plurality of tables.

Claim 25 (Previously Presented): The gateway device of claim 24, wherein at least

one of said plurality of tables stores NAT information and forwarding information related to

at least a first service domain and a second service domain contained in said plurality of

service domains, said first service domain and said second service domain respectively

containing a first set of addresses and a second set of addresses accessible from said gateway

device, wherein said first set of addresses and said second set of addresses do not overlap.

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Claim 26 (Original): The gateway device of claim 25, further comprising a service

selection block determining a specific service to which said packet relates to and causes said

packet to be processed according to a corresponding one of said plurality of tables.

Claim 27 (Previously Presented): The gateway device of claim 26, further comprising

a plurality of forwarding and NAT blocks wherein each of said plurality of forwarding and

NAT blocks is coupled to a corresponding one of a plurality of memory units, wherein each

of said plurality of memory units stores one of said plurality of tables.

Claim 28 (New): The method of claim 3, wherein said determining further comprises

providing a input port number also as said key and retrieving a new port number in addition

to said forwarding information and said NAT information, wherein said input port number

and said new port number identify a session at a transport protocol level.